

MATRIX PROGRAMS ON C – ବାଣ୍ଟି ଛୋଟି ହଉଛି, ଦେବୁଲା ?

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1. Matrix Addition
2. Matrix Substraction
3. Element matrix multiplication
4. Transpose
5. Trace
6. Norm

1. MATRIX ADDITION

```
#include<stdio.h>
int main(){
    int A[100][100], B[100][100], C[100][100];
    int m, n, a, b;

    printf("Please enter the number of rows and columns:");
    scanf("%d %d", &m, &n);

    printf("Enter the elements of matrix A:\n");
    for(a=0;a<m;a++)
        for(b=0;b<n;b++)
            scanf("%d", &A[a][b]);

    printf("Enter the elements of matrix B:\n");
    for(a=0;a<m;a++)
        for(b=0;b<n;b++) {
            scanf("%d", &B[a][b]);
            C[a][b] = A[a][b] + B[a][b];
        }

    printf("The result matrix is :\n");
    for(a=0;a<m;a++){
        for(b=0;b<n;b++)
            printf("%d \t",C[a][b]);
        printf("\n");
    }

    return 0;
}
```

2. MATRIX SUBTRACTION

```
#include<stdio.h>
int main(){
    int A[100][100], B[100][100], C[100][100];
    int m, n, a, b;

    printf("Please enter the number of rows and columns:");
    scanf("%d %d", &m, &n);

    printf("Enter the elements of matrix A:\n");
    for(a=0;a<m;a++)
        for(b=0;b<n;b++)
            scanf("%d", &A[a][b]);

    printf("Enter the elements of matrix B:\n");
    for(a=0;a<m;a++)
        for(b=0;b<n;b++) {
            scanf("%d", &B[a][b]);
            C[a][b] = A[a][b] - B[a][b];
        }

    printf("The result matrix is :\n");
    for(a=0;a<m;a++){
        for(b=0;b<n;b++)
            printf("%d \t",C[a][b]);
        printf("\n");
    }

    return 0;
}
```

3. ELEMENT BY ELEMENT MATRIX MULTIPLICATION

```
#include<stdio.h>
int main(){
    int A[100][100], B[100][100], C[100][100];
    int m, n, a, b;

    printf("Please enter the number of rows and columns:");
    scanf("%d %d", &m, &n);

    printf("Enter the elements of matrix A:\n");
    for(a=0;a<m;a++)
        for(b=0;b<n;b++)
            scanf("%d", &A[a][b]);
```

```

printf("Enter the elements of matrix B:\n");
for(a=0;a<m;a++)
    for(b=0;b<n;b++) {
        scanf("%d", &B[a][b]);
        C[a][b] = A[a][b] * B[a][b];
    }

printf("The result matrix is :\n");
for(a=0;a<m;a++){
    for(b=0;b<n;b++)
        printf("%d \t",C[a][b]);
    printf("\n");
}

return 0;
}

```

4. TRACE OF A MATRIX

```

#include<stdio.h>
int main(){
    int A[100][100], m, a, b, trace;

    printf("Please enter the number of rows:");
    scanf("%d", &m);

    printf("Enter the elements of matrix A:\n");
    for(a=0;a<m;a++)
        for(b=0;b<m;b++){
            scanf("%d", &A[a][b]);
            trace+=a==b?A[a][b]:0;
        }

    printf("The trace of the matrix is, %d\n", trace);

    return 0;
}

```

5. TRANSPOSE OF A MATRIX

```

#include<stdio.h>
int main(){
    int A[100][100], AT[100][100], m, n, a, b, trace;

    printf("Please enter the number of rows and columns:");
    scanf("%d %d", &m, &n);

```

```

printf("Enter the elements of matrix A:\n");
for(a=0;a<m;a++){
    for(b=0;b<n;b++){
        scanf("%d", &A[a][b]);
        AT[b][a] = A[a][b];
    }

printf("The transpose matrix is :\n");
for(a=0;a<n;a++){
    for(b=0;b<m;b++){
        printf("%d \t",AT[a][b]);
        printf("\n");
    }

return 0;
}

```

6. NORM OF A MATRIX

```

#include<stdio.h>
#include<math.h>

int main(){
    int A[100][100], m, a, b;
    float norm = 0.0;

    printf("Please enter the number of rows:");
    scanf("%d", &m);

    printf("Enter the elements of matrix A:\n");
    for(a=0;a<m;a++){
        for(b=0;b<m;b++){
            scanf("%d", &A[a][b]);
            norm+=a==b?A[a][b]*A[a][b]:0;
        }

    norm = sqrt(norm);
    printf("The norm of the matrix is, %f\n", norm);

    return 0;
}

```